Problem 1

- Simpson drives his car with an average velocity of 48.0 km/h to the east. How long will it take him to drive 144 km on a straight highway?
- How much time would Simpson save by increasing his average velocity to 56.0 km/h to the east?

$$v = \frac{\Delta x}{\Delta t}$$

$$\Delta t = \frac{\Delta x}{v} = \frac{144\ \text{km}}{48\ \text{km/h}} = 3\ \text{h}$$

$$\Delta t = \frac{\Delta x}{v} = \frac{144\ \text{km}}{56\ \text{km/h}} = 2.57\ \text{h}$$

time saved = 3h - 2.57h = .43h

Problem 2

- A bus travels 280 km south along a straight path with an average velocity of 88 km/h to the south. The bus stops for 24 minutes. Then, it travels 210 km south with an average velocity of 75 km/h to the south.
  - How long does the total trip last?
  - What is the average velocity for the trip?
  - Draw a displacement v. time graph for the trip.

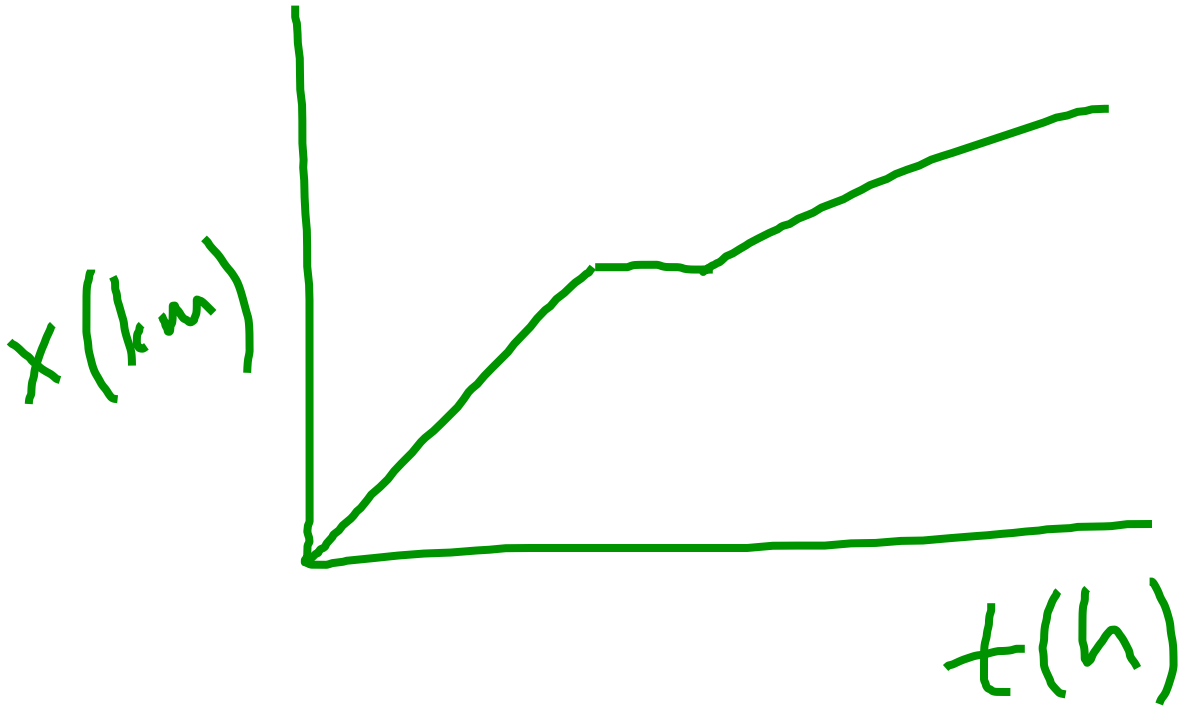
$$\text{total time} = \Delta t_1 + \Delta t_2 + \Delta t_3$$

$$= \frac{\Delta x_1}{v_1} + \Delta t_2 + \frac{\Delta x_3}{v_3}$$

$$= \frac{280\ \text{km}}{88\ \text{km/h}} + \frac{24\ \cancel{\text{min}}}{.4\ \text{h}} + \frac{210\ \text{km}}{75\ \text{km/h}}$$

$$= 6.38\ \text{h}$$

$$\text{avg } v = \frac{\text{total displacement}}{\text{total time}} = \frac{490\ \text{km}}{6.38\ \text{h}} = 76.8\ \text{km/h}$$


x (km)
t (h)